DOCUMENT RESUME

ED 066 793 24 EA 004 397

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TITLE	Environments for the Physically Handicapped. Educational Facilities Review Series Number 8.
INSTITUTION	Oregon Univ., Eugene. ERIC Clearinghouse on Educational Management.
SPONS AGENCY	National Center for Educational Research and Development (DHEW/OE), Washington, D.C.
BUREAU NO	BR-8-0353
PUB DATE	Aug 72
CONTRACT	OEC-0-8-080353-3514
NOTE	6p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Design Needs; Educational Facilities; *Environmental Influences; Exceptional Child Education; *Facility Requirements; Handicapped Children; Handicapped Students; Human Engineering; *Literature Reviews; Performance Factors; *Physically Handicapped; Planning (Facilities); School Environment; Special Education

ABSTRACT

Only recently is research into the total environmental requirements of the physically handicapped beginning to make substantial progress. Earlier literature in this field, which constitutes the majority of the literature presently available, concentrates on specifying basic building criteria but gives little or no attention to the nature of environmental interaction in the learning process. Educators and architects are now beginning to realize that the special architectural needs of the physically handicapped are complex and deserve more consideration than given in the past. This review surveys 24 documents previously announced in RIE, all but seven of which are available through ERIC. Annotations are provided for publications whose titles do not indicate their focus and content. (Author)

EA 004 397
ED 066793

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August 1972 Number 8

Environments for the Physically Handicapped

Alan M. Baas

> It is terribly difficult to approach the problem of exceptional children and their education in a dispassionate way. The problem is immense, and as one travels from school to school, and from program to program, one almost automatically "senses" that the physical environment influences these children. Any environmentally oriented person does not have to spend many hours with these children and their teachers before he becomes excited about the possibilities.
>
> *(Bednar 1969)*

Educators and architects are beginning to realize that the special architectural needs of the physically handicapped are complex and deserve more consideration than given in the past. No environment is neutral, particularly for the child who must exert extraordinary effort to mount a flight of stairs or move a wheelchair through a pair of heavy oak doors. Research has shown that a child's ability to cope with his physical environment has a great bearing on his personal and social development. And research is beginning to show that a "physical environment" extends far beyond the height of drinking fountains and the placement of doorknobs and influences the child as he learns.

It is not enough to facilitate the simple movement of handicapped students through a school building: it is necessary to understand the subtle differences in the ways such children perceive their surroundings. As Bednar and Haviland (1969) have pointed out, a three-story block-type school building can loom above the small child in a wheelchair in a terrifying manner and set the tone for his day even before

he enters its doors. Inside, his confidence is again challenged by highly polished floors flanked by panels of glossy surfaces whose reflections make people appear to float down the corridor. Ambiguity and uncertainty about immediate surroundings increase drastically as one's mobility is curtailed. Some children with physical disabilities may be extremely sensitive to noise and color stimuli; hence, an environment that most children could incorporate fairly rapidly into their daily routine might occupy a handicapped child's attention for an entire school year.

One of every eight children entering our schools today is considered "exceptional" in some way (Bednar and Haviland 1969). These include the physically handicapped, intellectually limited or gifted, mentally retarded, and maladjusted. Although the gap is steadily closing between those who need special facilities and those who are receiving them, research continues to identify subtle environmental factors influencing the performance of these children and necessitating additional facility alterations.

Emphasizing the personal relationship each child establishes with his or her immediate territory, Bednar and Haviland call for additional understanding of the "nature of the interface between the human organism and its physical environment." They recommend classifying children according to learning problem rather than by medical disability and urge that educators be aware of how various environmental systems interact. While their report is primarily intended to underscore the issues and lay the groundwork for future efforts, it also details the special perspective educators must have to integrate the needs of disabled children into the design and management of a school facility. This perspective must begin with a basic sensitivity to the influence of environmental variables (space, sound, temperature, color, texture, light, and shape) on the psychology and learning of all children.

An in-depth research project on physical environment and special education, sponsored by the Bureau of Education for the Handicapped, receives detailed treatment from Abeson and Berenson (1970) and Abeson and Blacklow (1971). In the first document, Abeson and Berenson underscore the need for educators and facility planners who are trained or experienced in planning and designing special education facilities. They identify three broad areas where substantive efforts are needed:

- improvement of techniques for evaluating facility planning
- measurement of effective use of the school environment
- assessment of the relationship between man and his physical environment

The bulk of their report consists of appendixes reporting the findings of the research project: appraisals of special education facilities in the United States; information useful to facility planners and a special planning process guide; methodologies for field experimentation in measuring environmental roles in educational processes; and techniques for disseminating information.

In the second document, Abeson and Blacklow summarize the basic findings of the research project and identify the implications for design planning. Results were drawn from data regarding student integration, community and parent involvement, educational programs and activities, social adjustment, and administrative planning. Additional research parameters included learning spaces, observation systems, and transportation data. The authors also describe planning mechanisms and strategies

from the point of view of the architect and special educator and provide illustrated solutions for specific environmental problems. The document concludes with selected research findings related to physical and psychological effects of environmental manipulation, research needs, and methodologies for further research.

Only recently is research into the total environmental requirements of the physically handicapped beginning to make substantial progress. Earlier literature in this field concentrates on specifying basic building criteria and gives little or no attention to the nature of environmental interaction in the learning process. Such documents still constitute the majority of the literature that is presently available. A representative sample of this literature is cited in the bibliography that follows. Annotations are provided for publications whose titles do not indicate their focus and content. All but seven documents are available through the ERIC Document Reproduction Service.

REFERENCES

Abstracts of the following documents can be located in **Research in Education.** The complete texts are available from the ERIC Document Reproduction Service (EDRS), commercial channels, or both. Publications can be ordered in either facsimile paper copy form or microfiche.

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Abeson, Alan, and Berenson, Bertram. **Physical Environment and Special Education: An Interdisciplinary Approach to Research. Final Report.** Arlington, Virginia: Council for Exceptional Children, 1970. 307 pages. ED 056 423 MF $0.65 HC $13.16.

Abeson, Alan, and Blacklow, Julie, eds. **Environmental Design: New Relevance for Special Education.** Arlington, Virginia: Council for Exceptional Children, 1971. 124 pages. ED 055 404 MF $0.65 HC $6.58.

American Standards Association, Inc. **American Standard Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped.** New York: 1961. ED 018 947 Document not available from EDRS.

Describes detailed requirements for facilities to accommodate the physically disabled. Includes definitions of disabilities and technical terms and discusses site development, buildings, equipment, communication, and hazards.

Bayes, Kenneth, and Francklin, Sandra, eds. **Designing for the Handicapped.** 1971. 79 pages. ED 055 378 Document not available from EDRS. (Available from Society for Emotionally Disturbed Children, 1405 Bishop Street, Room 303, Montreal 107, Quebec, Canada, $4.00.)

Written by architects and other professionals in the field, the eleven articles discuss architectural methods for incorporating the special psychological and physical needs of the handicapped into the design of specialized schools, institutions, and other buildings. Appendixes include an annotated

list of research projects and a bibliography of relevant materials.

Bednar, Michael J., and Haviland, David S. **The Role of the Physical Environment in the Education of Children with Learning Disabilities.** Troy, New York: Center for Architectural Research, Rennselaer Polytechnic Institute, 1969. 102 pages. ED 034 377 MF $0.65 HC not available from EDRS.

Council for Exceptional Children. **Physical Facilities: Exceptional Child Bibliography Series.** Arlington, Virginia: Information Center on Exceptional Children, 1971. 22 pages. ED 053 516 MF $0.65 HC $3.29.

Contains 91 annotated references dealing with educational and institutional physical facilities for exceptional children. Includes subject and author indexes.

Dade County Public Schools. **Educational Specifications for Special Education Facility.** Miami, Florida: 1969. 59 pages. ED 046 178 MF $0.65 HC $3.29.

Presents educational facility specifications for physically handicapped children, including space requirements and equipment.

ERIC Clearinghouse on Educational Facilities. **Design Needs of the Physically Handicapped. A Selected Bibliography.** Madison: University of Wisconsin, 1970. 38 pages. ED 037 992 MF $0.65 HC $3.29.

Provides information sources relating to educational and special education facilities, public facilities, equipment needs for mobility, supportive and background data on outdoor recreation, films, and people and places involved in special education facility design and planning.

Goldsmith, Selwyn. **Designing for the Disabled.** London, England: Royal Institute of British Architects, 1967. 207 pages. ED 032 697 Document not available from EDRS. (Available from Pendragon House, 899 Broadway Avenue, Redwood City, California 94063.)

Provides extensive, illustrated treatment of design and construction criteria for public buildings and housing to accommodate the physically handicapped. An appendix lists cost implications, definitions of terms, selected references, and organizations associated with the welfare of the disabled.

Gordon, Ronnie. **The Design of a Pre-School "Learning Laboratory" in a Rehabilitation Center.** New York: Institute of Physical Medicine and Rehabilitation, New York University, 1969. 66 pages. ED 033 764 Document not available from EDRS. (Available from Publication Office, Institute of Rehabilitation Medicine, 400 East 34th Street, New York, New York 10016, $3.00, checks payable to N.Y. University Medical Center.)

Discusses in detail, with photographs and illustrations, a preschool facility specially designed for handicapped children. Recommends that teachers have theoretical and practical knowledge of normal children's learning and behavior before evaluating and educating handicapped children.

Gust, Tim, and Shaheen, Elaine. **References Concerning Architectural Barriers in Higher Education.** Pittsburgh: Research and Training Center in Vocational Rehabilitation, University of Pittsburgh, n.d. 5 pages. ED 021 303 MF $0.65 HC $3.29.

"How to Adapt a Campus for the Handicapped. Students on Wheels." **College Management,** 2, 12 (December 1967). ED 020 648 Document not available from EDRS.

Identifies movement and maneuverability as the major problems confronting handicapped students on a college campus.

Massachusetts School Building Assistance Commission. **Suggested Facilities for Special Class Programs.** Boston: 1965. 16 pages. ED 037 002 MF $0.65 HC $3.29.

McGowan, John F., and Gust, Tim. **Preparing Higher Education Facilities for Handicapped Students.** Columbia: University of Missouri, 1968. 107 pages. ED 043 988 MF $0.65 HC $6.58.

Reviews program plan, site and building modifications, and student services for the handicapped at

the University of Missouri. Appendixes include photographs of modifications and specifications for facilities and buses.

Michigan State Board of Education. **Suggestions for Accommodating the Crippled in Regular Buildings.** Lansing: 1966. 2 pages. ED 021 429 MF $0.65 HC $3.29.

Michigan State Legislature. **Making Facilities Accessible for the Physically Handicapped. Act No. 1 of the Public Acts of 1966.** Lansing: 1966. 18 pages. ED 024 249 MF $0.65 HC $3.29.

Missouri State Department of Education. **Design Criteria for Public School Plants Accommodating the Physically Disabled.** Jefferson City, Missouri: School Building Services, [1968]. 5 pages. ED 027 721 MF $0.65 HC $3.29.

National Research Council of Canada. **Building Standards for the Handicapped, 1965. Supplement No. 7 to the National Building Code of Canada.** Ottawa, Ontario: 1965. 24 pages. ED 037 040 MF $0.65 HC $3.29. (1970 edition, Supplement No. 5, available from The Secretary, The Associate Committee on the National Building Code, National Research Council, Ottawa, Ontario, Canada. Order No. NRC 11430, $0.25.)

Gives performance criteria and recommendations for public facilities planning, site development, and building equipment to accommodate the physically handicapped. Includes treatment of hazards and safety precautions.

New York State Council of Parks and Outdoor Recreation. **Outdoor Recreation for the Physically Handicapped. A Handbook of Design Standards.** Albany: 1967. 19 pages. ED 036 131 MF $0.65 HC $3.29.

Nugent, Timothy J. "Design of Buildings to Permit Their Use by the Physically Handicapped." Paper presented at a conference of the Building Research Institute, Division of Engineering and Industrial Research, Washington, D.C., Fall 1960. Washington, D.C.: National Research Council, National Academy of Sciences, 1961. 16 pages. ED 033 534 MF $0.65 HC $3.29.

Discusses changes in existing structures and specific design features for new structures to make them usable by the physically handicapped.

Orange County Board of Public Instruction. **An Adaptive Playground for Physically Disabled Children with Perceptual Deficits: The Magruder Environmental Therapy Complex.** Orlando, Florida: [1969]. 22 pages. ED 036 941 MF $0.65 HC $3.29.

Illustrated discussion of Magruder Environmental Therapy Complex (ETC)—a free, unstructured play area specially designed for preschool children with perceptual disabilities.

Rogerson, Robert W. K. C., and Spence, Philip H. **A Place at Work: The Working Environment of the Disabled.** 1969. 207 pages. ED 046 163 Document not available from EDRS. (Available from Robert Mac LeHose and Company, Ltd., University Press, Glasgow, W. 3, Scotland.)

Designed for the architect and student, this detailed treatment of the environmental needs of the physically handicapped considers schools and other public buildings. Primary emphasis is on the planning of working areas.

State University Construction Fund. **Making Facilities Accessible to the Physically Handicapped.** Albany, New York: 43 pages. 1967. ED 029 439 MF $0.65 HC $3.29. (Also available from State University Construction Fund, 194 Washington Avenue, Albany, New York 12210.)

Guidelines on performance criteria for the State University of New York consider provisions for ambulant and semiambulant handicapped students. Specifications for entrances, ramps, stairs, doors, walks, intersections, gratings and manholes, parking lots, and bus service are included. Interior design criteria also cover restrooms, bedrooms, stairs, elevators, and fire protection.

Texas Education Agency. **Architectural Considerations for Classrooms for Exceptional Children.** Austin: 1967. 29 pages. ED 028 587 MF $0.65 HC $3.29.

Architectural guidelines specify classroom location, size, acoustics, heat and light, ventilation, electrical outlets, bulletin boards, chalkboards, floors, sinks, drinking fountains, and counter spaces for handicapped students.

Clearinghouse Accession Number: EA 004 397

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